

## Chairman's Award - Team 2557

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2019 - Team 2557

### Team Number

2557

### Team Name, Corporate/University Sponsors

OSPI/Boeing/Tacoma School District/Microsoft/F5 Networks, Inc/Zumar Industries Incorporated/Intellectual Ventures/Elements of Education Partners/FIRST Washington/Multicare/Aluminum and Bronze Fabricators/Pierce Aluminum Company/First Tech Credit Union/Bamford Foundation/Marathon Oil/Northwest Pipe and Steel&Tacoma School of the Arts&Science and Math Institute&Industrial Design Engineering and Art High School

### Briefly describe the impact of the *FIRST* program on team participants with special emphasis on the 2018/2019 year and the preceding two to five years

The SOTAbots consistently inspire team members to exceed expectations for themselves. By working one on one, in subteams, and as a whole, members learn technical skills, entrepreneurship, computer programming, collaboration, perseverance, conflict resolution and leadership. Our team has had a 100% graduation rate for the past 5 years with our alumni pursuing STEAM fields as proactive, independent, and charismatic leaders.

### Describe the impact of the *FIRST* program on your community with special emphasis on the 2018/2019 year and the preceding two to five years

The SOTAbots showcase our team and FIRST programs in our community. Outreach includes Tacoma School Board meetings, LeMay Car Museum events, freshman orientations, Back-to-School Nights, middle school College & Career Nights, and Tacoma Rainiers STEM Night. When we visit elementary and middle school classrooms, we inspire kids to reach for the stars. Students sometimes don't realize that STEAM fields are obtainable, and our goal is to make the necessary resources more accessible.

### Team's innovative or creative method to spread the *FIRST* message

Our team is enthusiastic about connecting with our community. We are reaching out with social media to share our team with the internet through routine website updates, responsive social networking and even a long-running comedy page. Beyond the screen, we not only teach about STEAM, but also facilitate programming puzzles and engineering games in classrooms that integrate critical thinking in a fun and memorable way.

### Describe examples of how your team members act as role models and inspire other *FIRST* team members to emulate

Throughout our history, the SOTAbots actions show that competing fairly and supporting other teams is a strength and not a weakness. We are a resource for teams bringing extra tools and materials to all of our competitions, hosting an annual FRC workshop and running a practice field, open to any PNW team. We model Gracious Professionalism throughout our community, volunteering over 3,500 hours in the last two years.

**Describe the team's initiatives to help start or form other FRC teams**

Upon learning that Eastside Catholic is starting a team to compete in the 2020 season, the SOTAbots jumped at the chance to help them prepare. Our team has helped mentor FRC teams 2555, 2929, 3393, 3576, 3781, 3826, and 4918 as they got started and found their footing in FIRST. As a part of a large grant received by FIRSTWA, the SOTAbots are assisting with an initiative to create 10 new FRC teams throughout our state, including 2 in our area that we will mentor in the coming seasons.

**Describe the team's initiatives to help start or form other *FIRST* teams (including Jr.FLL, FLL, & FTC)**

The SOTAbots are eager to start and mentor new FIRST teams in our city. We created and mentor an FTC team at Jason Lee Middle School, as well as an FLL team at Manitou Park Elementary and we mentor 3 at Brookdale Elementary. These schools have more than 60% low-income students and each team is entirely planned and managed by SOTAbots students. In addition, we mentor 2 FTC teams at the Science and Math Institute and connect over 79 FIRST teams of all levels in the Tacoma Robotics Alliance.

**Describe the team's initiatives on assisting other *FIRST* teams (including Jr.FLL, FLL, FTC, & FRC) with progressing through the *FIRST* program**

We often visit elementary and middle school classrooms, piquing kids' curiosity about FIRST. Veteran SOTAbots take it upon themselves to employ the skills they have developed on the team by mentoring FTC and FLL programs, fostering a love for STEAM in new learners. Through hands-on experience, kids discover a passion for robotics and want to continue with FIRST. We show kids that no matter their skill set they are valued on any FIRST team by explaining that it's more than the robot.

**Describe how your team works with other *FIRST* teams to serve as mentors to younger or less experienced *FIRST* teams (includes Jr.FLL, FLL, FTC, & FRC teams)**

Our mentors serve as valuable resources to other FIRST mentors in the area, giving advice to emerging FRC teams and guiding them on how to navigate FIRST. This year we held our 6th annual FRC workshop where mentors and members, with varying levels of experience, taught or attended classes. On elementary school visits this January, many teachers were interested in starting FLL teams, and we are excited to forge more FIRST connections.

**Describe your Corporate/University Sponsors**

Our sponsors are invaluable assets to us, providing funds, materials, and mentorship. We are fiscally sponsored by grants from Washington's Office of Superintendent of Public Instruction, Boeing and Amazon. We received material donations from companies including MultiCare, Tacoma Public Schools, and Zumar. Mentors from Green River College, University of Puget Sound, F5, and Microsoft support us.

**Describe the strength of your partnership with your sponsors with special emphasis on the 2018/2019 year and the preceding two to five years**

We are grateful for the diverse array of resources and knowledge our sponsors and partners provide. Our sponsors make the SOTAbots a successful team that provides students with a project-based learning environment with a wide variety of real-world skills. We continue to visit community partners such as the American's Car Museum, the Tacoma Children's Museum and even Mary Bridge Children's hospital. We proactively connect with our sponsors via email, social media and invitations to competitions.

**Describe how your team would explain what *FIRST* is to someone who has never heard of it**

The SOTAbots is an FRC team, a 501(c)(3) non-profit, and a family. Since day one, we have shared our passion for STEAM in our community, educating and inspiring thousands of learners, leaders and innovators. We work hard to make STEAM related educational resources more accessible. We support other teams, as we want everyone to compete at their best. Our culture of collaboration radiates positivity throughout competitions. We are creating a brighter future with the leaders of tomorrow.

**Briefly describe other matters of interest to the *FIRST* judges, if any**

FIRST is an organization that encourages teamwork and leadership through project-based learning. It was created to inspire students to pursue STEM (Science, Technology, Engineering, and Math) careers. While FIRST is a robotics-based organization, it is not just about robots. Students on FIRST teams can learn business and technical skills, create digital media, and program apps. FIRST focuses on positively impacting students and communities, by promoting STEM worldwide.

**Team Captain/Student Representative that has double-checked this submission.**

Milana D'Aniello

## Essay

### Local Robotics Team is Improving Tacoma

TACOMA, WA - The SOTAbots, FIRST robotics team 2557 is expanding STEM (Science, Technology, Engineering, and Math) education to include the Arts. Since the team's inception, they have held the belief that without the Arts, STEM is incomplete. They have worked to open doors for STEAM education, not because it is easy, but because for people in their community, the necessary resources can be hard to access.

We have been watching their progress since 2008. From their beginning in a garage at a nontraditional public high school, this team has grown to include a diverse group of 50 members combining the Tacoma School of the Arts (SOTA), The Science and Math Institute (SAMI), and the School of Industrial Design, Engineering, and Art (IDEA).

This team is doing great work for their community, but what is FIRST? One SOTAbot describes it as "an organization that encourages teamwork and leadership through project-based learning." While FIRST is a robotics competition, it is about more than robots. FIRST focuses on positively impacting students and communities by promoting STEM worldwide.

### Getting Better Every Day

With their Jedi/Padawan system, the SOTAbots have created a way to share STEAM knowledge and skills. In this system, a rookie member, or Padawan, is paired with a veteran Jedi to learn important industrial skills. This relationship also teaches Jedi project delegation and conflict resolution. As one alumna told us in an interview, "the team provided opportunities for me to improve skills like working under pressure, innovating with limited time and resources, and teaching others." Jedi are eager to teach their Padawans through project-based learning, giving those new members a sense of ownership in their tasks.

FIRST team 2557 uses this hands-on learning method as a unique opportunity both to teach new students and to sustain their team. Through running restaurant takeovers, hosting an annual fundraising auction, and connecting with monetary and material sponsors, students utilize to communicate professionally with industry experts.

### Cooperation is their Key to Success

Sporting their passion for FIRST, the SOTAbots have been event managers for the FTC Salk League and Watt Interleague events since 2014. They use these opportunities to connect and reconnect with other teams and support them in their first weeks of competition. This year, team 2557 expanded their involvement by volunteering at two FLL qualifiers and the FLL semi-finals. The group also volunteers at every FRC event they attend, racking up over 3,500 volunteer hours in the past 2 years alone.

Wanting to ensure that everyone can have a positive experience with STEAM, the SOTAbots are always searching for new ways to forge connections within FIRST. Sharing tips for making a successful team, they helped a SOTAbots alumna start an FRC team in King County to compete in the 2020 season. Continuing their pursuit to increase FIRST in their own community, the SOTAbots started a student-mentored FTC team at Jason Lee Middle School, a school where nearly 60% of students come from low-income families. They also created a high school FTC curriculum, assisting two teams as a part of the SAMI robotics classes. This year, the SOTAbots founded an FLL team at Manitou Park Elementary and mentored three more teams at Brookdale Elementary; both are schools where over 70% of the students come from low-income families. These teams are part of their initiative to create a FIRST pipeline in the community.

For the past decade, the Tacoma Robotics Alliance (TRA) has been a resource for FIRST teams to collaborate across Washington. As a founder of this Alliance, the SOTAbots build a full-sized, up-to-spec practice field every year for teams to put their drivers and autonomous programs to the test. This season, the TRA will connect 79 teams across all levels of FIRST. The SOTAbots always show enthusiasm when helping other teams because they believe it is important that every team has the resources and support to play their best.

Always excited to collaborate, the SOTAbots started and continue to host an annual FRC workshop. Last year, teams from all corners of Washington attended the sixth annual workshop in November. Thirty-four classes were taught by SOTAbots members and mentors, as well as FIRST staff and experts from other teams. The SOTAbots hosted a diversity training, with mentors from across every league in attendance. They collaborated with FIRSTWA, having secured a grant from United Way to host this training in an effort to increase awareness of bias and privilege across their community.

### This Team is Making a Difference

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Two seasons ago, the team started a research project with the Girls FIRST Initiative to collect, analyze, and share information about the gender demographics of the FRC Pacific Northwest District. They published a blog detailing the research findings on a national, peer-reviewed website called FIRST Ladies and on their own website. The project has now expanded to include the Michigan district and also inspired a similar study of the gender demographics of FRC teams in Ontario, Canada. This year, over 50 teams participated in the study and more workshops on the findings will be run at competitions throughout the season. This project has promoted the implementation of strategies to engage more girls and women and as a result, increased the overall percentage of female participation in FIRST across the PNW.

In addition, these dedicated SOTAbots have stretched their FIRST connections by joining The Green Alliance (TGA). TGA enables collaboration between FRC teams to collect scouting data spanning as far as Australia and Canada. This team of trendsetters was the first PNW team to make the ambitious decision to join this alliance last summer. Leading by example, they quickly recruited 12 other PNW teams to make it the second best-represented region in the 44 team alliance.

### In it for the Long Haul

With all of the new and exciting initiatives the SOTAbots are a part of, this team remains committed to their longtime partners. They volunteer at America's Car Museum regularly, bringing robotics to the world-class collection of cars. Working with this corporate sponsor, the SOTAbots were enlisted to help design a new alternative energy exhibit and presented it at the grand opening. While a car museum may be a place where one would expect to see STEAM events, team 2557 also ventures out from the ordinary. Over the summer, the team traveled north to be part of the annual Edmonds Summer Festival, where fairgoers were thrilled to see robots zipping around. They fit right in at this event since, for the past two years, they have been a frequent presence at their local Farmers' Market.

Beyond interacting with over a thousand community members and spreading the message of FIRST to the public, the SOTAbots connect with little learners one on one. Once a month at the Tacoma Children's the SOTAbots teach kids how to drive new and exciting robots. This partnership started ten years ago when the team began volunteering at the Gingerbread Jamboree, an event where the community comes together to make gingerbread houses. Due to this long-standing connection, the SOTAbots were featured in a film made by the Children's Museum in April of last year highlighting STEAM for a wide audience of educators. The Children's Museum also steered them towards a grant that ultimately allowed them to update and increase their outreach efforts throughout Pierce County. Centered around spontaneous play and STEAM in unusual places, this grant was entirely student written and managed.

Every other Monday since 2013, the SOTAbots have gone to Mary Bridge Children's Hospital. They share robotics with children often hooked up to IV stands and wearing hospital gowns. Team members brighten kids' days by allowing them to drive robots around the hospital. As one student put it: "I've been a volunteer for two years, and to this day it fills my heart with joy to watch children's eyes light up when they play with robots."

During January, FRC Team 2557 started volunteering at the Adams Street Family Shelter, a homeless shelter for women and children. The SOTAbots bring little robots to the preschool on Friday mornings and let the kids drive them around the playrooms. The preschoolers chase the robots, giggling, and simply having a great time.

### Educating the Future of Tacoma

The SOTAbots run a free six-week summer camp called Xplore where elementary students learn how to build and program LEGO robots. Campers from low-income areas not only learn about robots, but also are provided with breakfast, lunch, and snacks. The Xplore summer program has reached thousands of students since 2013, inspiring the next generation of STEAM leaders and gives underprivileged youth access to engineering experiences.

Every January, the SOTAbots visit elementary and middle school classrooms, bringing FLL robots and fun engineering challenges to uncover the inner engineer in all of these students. They have presented about FIRST and STEAM to classrooms since 2011, impacting well over 2,500 students in the past three years. A current team member recalls, "When I was in middle school, the SOTAbots came to my class and encouraged me to join my school's FTC team that they mentored. The confidence and engineering skills that I gained from FTC later inspired me to continue on to FRC."

The SOTAbots are newsworthy. Their excitement for STEAM is infectious. Their passion for teaching is contagious. They pique curiosity in even the youngest engineers. From FIRST events to farmers markets, they inspire kids of all ages and backgrounds. The SOTAbots are changemakers, lending a hand to learners, leaders, and innovators, creating a brighter future for Tacoma.